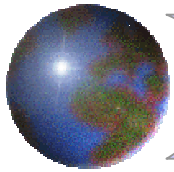


NAVSEA HQ **Commissioning** **Lessons Learned**

Rudy Perkey, PE

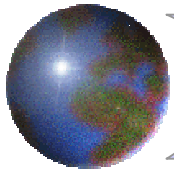
February 2003



BEFORE - NAVSEA HQ Campus



***Largest single office relocation in naval history
1 Million Sq-Ft Project***



AFTER ...



Chiller Plant

Bldg 197
•Reuse
•5 decks

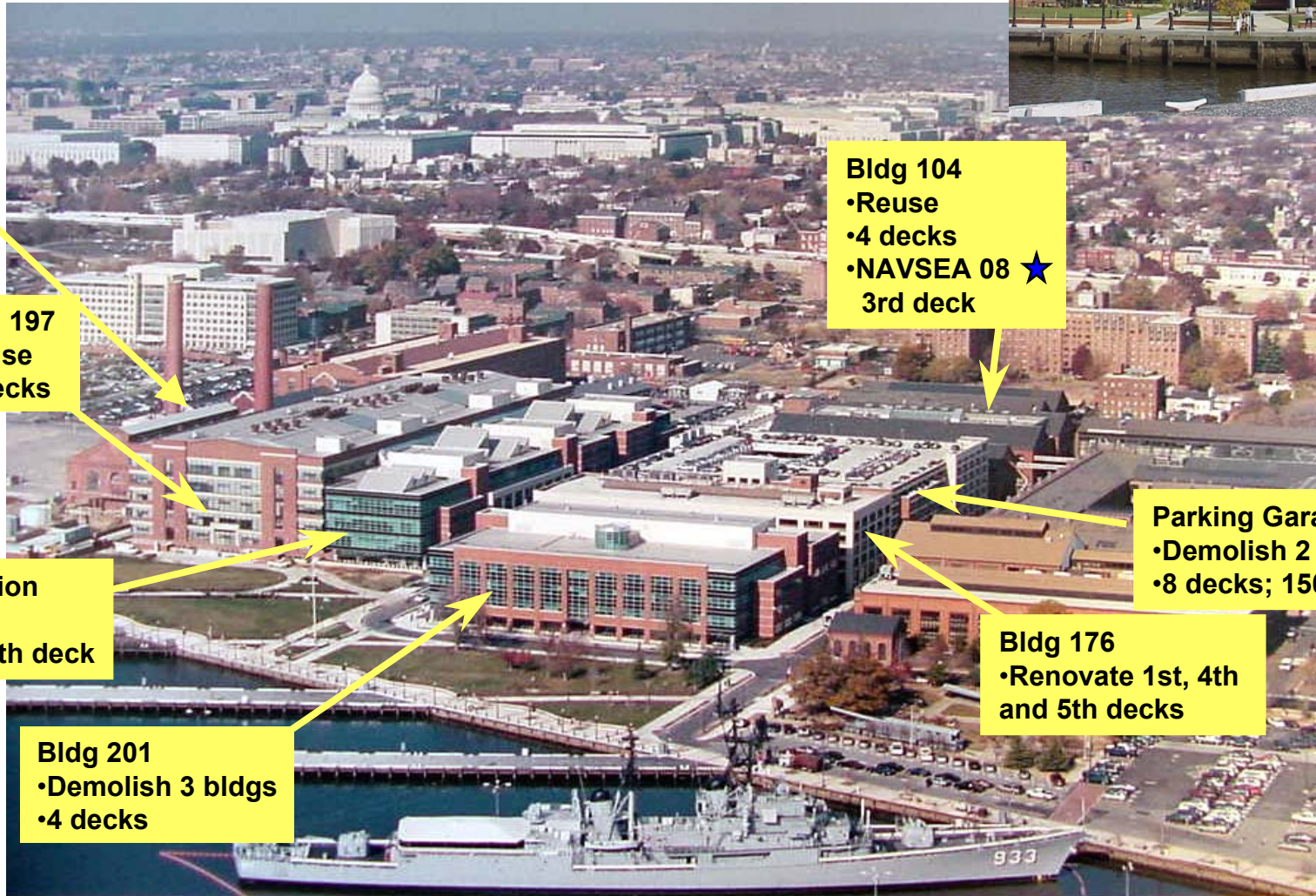
Bldg 104
•Reuse
•4 decks
•NAVSEA 08 ★
3rd deck

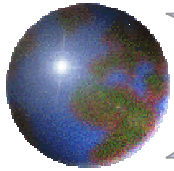
Parking Garage
•Demolish 2 bldgs
•8 decks; 1500 cars

Bldg 176
•Renovate 1st, 4th
and 5th decks

Bldg 197 Addition
•4 decks
•NAVSEA ★ 4th deck

Bldg 201
•Demolish 3 bldgs
•4 decks





Project Background

Timeline

◆ **Project drivers**

- BRAC III (93): NAVSEA to move to White Oak; N08 to Annex
- BRAC IV (95): NAVSEA & N08 to WNY
- Move out of crystal city by Jul 2001 (ADA)

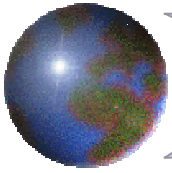
Turner

Forrester

- | | | |
|----------------------------|-----------------------------|------------------|
| ◆ Award Date: | Dec 1997 | Jan 2000 |
| ◆ ROICC full up: | ~Mar 1998 | ~Mar 1998 |
| ◆ Acq Strategy: | DB (35% design)/BVSS | MACC |
| ◆ Original CCD: | July 2000 | May 2001 |
| ◆ BOD: | Jan – Jul 2001 | May 2001 |
| ◆ ROICC @ 50%: | Jan 2001 | Jan 2001 |
| ◆ ROICC transition: | Apr 2001 | Apr 2001 |
| ◆ ADR: | May 2002 | |

Commission Team Gone By This Time

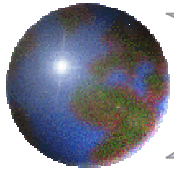
- ◆ **Post ADR CCD: Target Jun 2002 (CoC)**



Contract Requirements

Commissioning

- ◆ **“Most extensive HVAC spec Navy ever written”**
 - **37 pages long**
- ◆ **ASHRAE guidelines pertained...for commissioning too**
- ◆ **Required commissioning on HVAC only**
- ◆ **Commissioning HVAC Plan required for Navy approval**
 - **Did Navy ever approve the commissioning plan?**



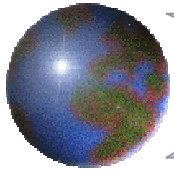
Lessons Learned

Source Selection

- ◆ **Add Commissioning as a selection factor**

Contract Requirements

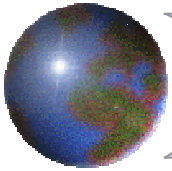
- ◆ **Maintain ASHRAE guidelines for indoor temperatures**
- ◆ **Use prescriptive specifications for Commissioning**
- ◆ **Require TAB and Auto Temp Control subcontractors to be 1st tier contractors**
- ◆ **Require government approval to remove CQ, Supt, Commissioning Authority so that contractor is not removing personnel for “doing what is expected per contract”**



Lessons Learned

Contract Requirements

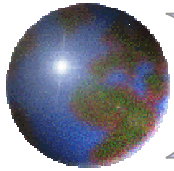
- ◆ **Require Design Authority to be part of the Commissioning process**
- ◆ **Designate the Commissioning Authority as a party that maintains government interest**
- ◆ **Require line item breakout of level of effort and costs for Commissioning**
- ◆ **Commission all systems**
 - **Elevator, roofing, windows, fire alarm, fire protection, emergency generation, electrical, domestic hot water, etc.**



Lessons Learned

Contract Requirements

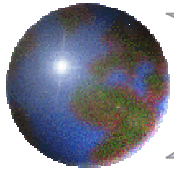
- ◆ **Control Drawings Construction submittals which include the sequence of control should be Gov't approved**
- ◆ **Duct air leakage tests performed by a certified TAB company**



Lessons Learned

Design/Requirement Identification

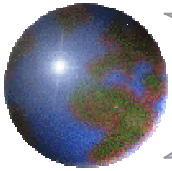
- ◆ **Get full customer buy-in on all Operational design issues**
- ◆ **Operation of each component in each system should be crystal clear in contract documents**
- ◆ **A control matrix identifying control positions should be developed**
- ◆ **All control variables (temperature, pressure, and air / water volumes) should be included on the control drawings**
- ◆ **Commissioning submittal requirements clearly indicated in contract documents**



Lessons Learned

Commissioning Process

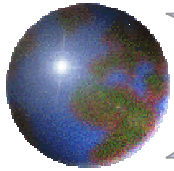
- ◆ **Require partnering just for the commissioning team and effort**
- ◆ **Make Commissioning a key factor of payment**
- ◆ **Provide / expand permanent commissioning expertise on ROICC staff**
- ◆ **Review / Commission for full year of occupancy**
- ◆ **Require stamped, signed, certified, TAB reports**
- ◆ **Get manufacturer reps on-site to inspect installation /system operations**



Lessons Learned

Commissioning Process

- ◆ **The Owner / Operator should be a greater part of the design review, commissioning, and acceptance**
- ◆ **Keep well organized Documentation**
- ◆ **Approve / insert authority of the Process**
- ◆ **Post Occupancy Debugging**
- ◆ **Checklist Development**



Lessons Learned

ROICC Staffing

- ◆ **Assign ROICC full duration of project similar to hospitals**
- ◆ **Build in continuity of management processes in ROICC transition**
- ◆ **Manage transition**

ADR Negotiation

- ◆ **Involve end user and region in government position**